Barriers and Opportunities for DG Utility/Customer Perspective

Presented by

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Energy 2002 Distributed Energy Conference

Palm Springs, CA

June 4, 2002

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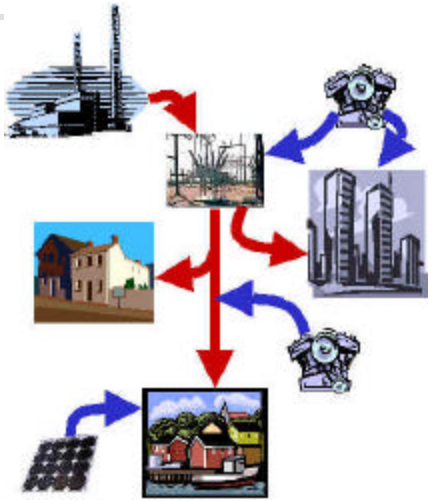
Overview

- Markets for DG?
- Benefit is in the Eye of the Beholder
- A View From the Top - Utilities/Customers
- Real-World Considerations
- Opportunities for DG
- Analysis/Implementation Process
- Outcome of Analysis
- Summary



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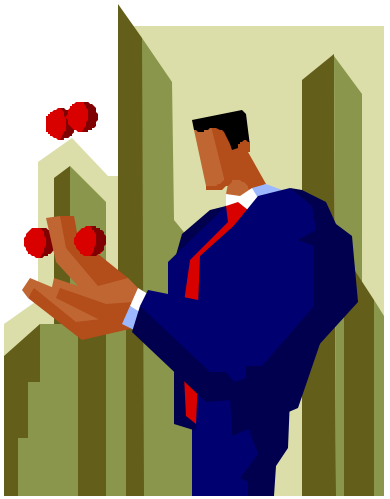
Markets for Distributed Generation

CHP Applications

- Industrial / Commercial
- Hospitals / Health
- Resorts
- Multi-residential – Single meter

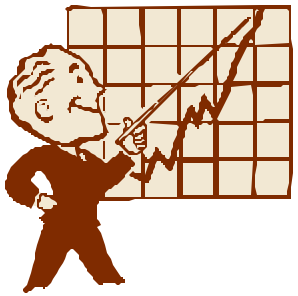


Electric Only Applications

- Industrial / Commercial with sensitive loads
- Other Businesses to reduce cost – Peak shaving
- Electric Distribution Grid Support

Benefit is In the Eye of the Beholder

- **End-Use Customer**
  - Reduce energy costs
  - Supplement power when needed
  - Increase electric service reliability
  - Decrease exposure to electricity price volatility
  - Improve power quality



- **Utility Grid Support (MW size)**
  - Better utilization of T&D assets
  - Reliability improvement
    - ***voltage & VAR support***
  - Defers grid upgrades
    - through integrated planning
  - Flexibility on distribution system upgrades

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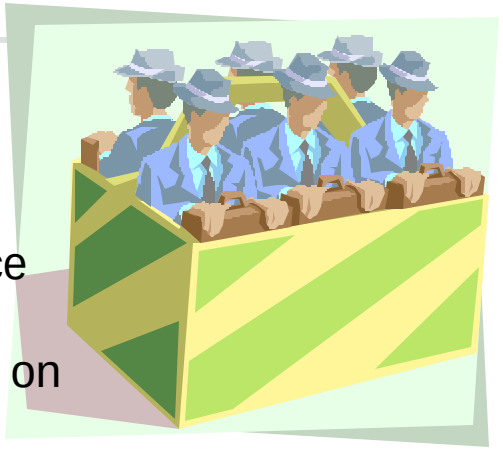
Utility Perspective on DG



- System's benefits are premature
  - Impacts to electric grid not yet verified
  - Dynamics of DG operation might reduce reliability
  - Positive impact from small DG systems on distribution circuits to be negligible
- Economic justification based on specific application and term
  - DG is viewed as a short-term solution
  - No implementation due to economics
- Support of standards for interconnection to the grid
  - Interconnection requirements are for safety

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What Does That Mean ?

- Don’t have enough detailed information to assess benefits to electric grid
- Will require risk on customer side with physical assurance
- Utility economics based on a specific project
- Will support the interconnection of DG to meet regulatory mandate
- No economic incentive for utilities to embrace DG

Real-World Considerations

- **Utility**
  - *Standby/backup power costs*
  - *Interconnection requirements*
  - *Changing rate structures*
- **Environmental permits**
  - *Airborne emissions limitations*
  - *Noise restrictions*
- **Local zoning restrictions /permitting**
- **Fuel infrastructure**
- **Community impacts**

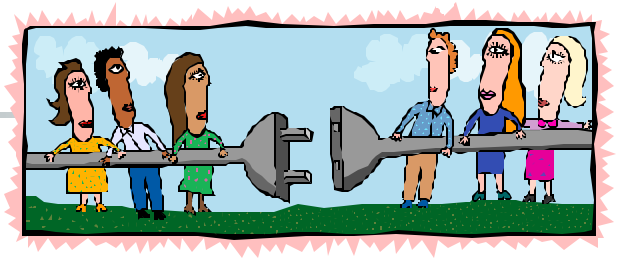
More Real-World Stuff

- **Regulatory Activity**
  - **Incentive programs to encourage deployment of DG**
  - **Confusing mix of legislative bills with disincentives for DG**
    - ***Exit & stand-by fees, Increased emissions control***
  - **Gas Industry Restructuring (GIR)** decision could have significant impact
    - *Local utility gas procurement for noncore customers*
    - *Eligibility of customers to be Core vs Noncore*
    - *Curtailment priorities*

What About the Customers ?

- Customers want options, but they're confused
- What are the total costs of DG?
- How do they get started?
- They are not in the electric business
- Bottom line – Customers want savings and reliable service

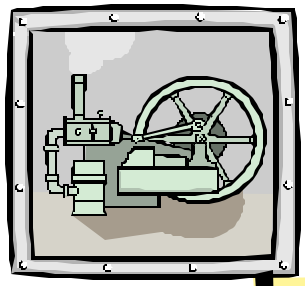
Opportunities

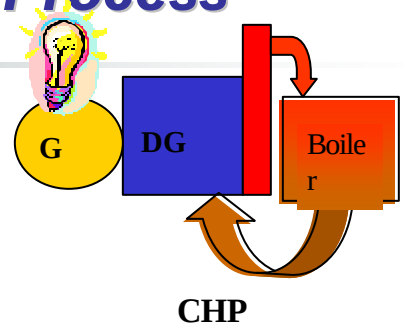


- Third-parties providing energy services with on-site generation – energy contracts
- Customers can take advantage of incentive programs
  - CA incentives on first cost
  - Federal and State tax incentives
- Analyze critical facility operations
  - Determine cost of power outages
- Conduct a DG study to determine potential fit and estimated costs
- Seek professional engineering/consulting help
  - *Look for a solutions, not a technology*

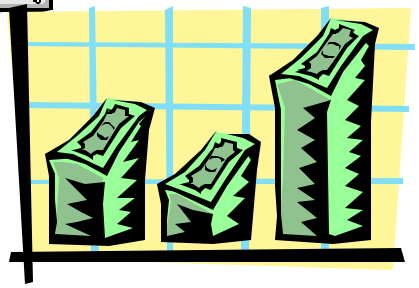
Analysis / Implementation Process

- **Technologies**
  - Electric only
  - CHP
- **Economics**
  - Cost of capital
  - Rate of return
  - Tax rates
  - Government incentives
- **Installation**
  - Permits
  - Interconnection fees/application
  - Fuel contracts

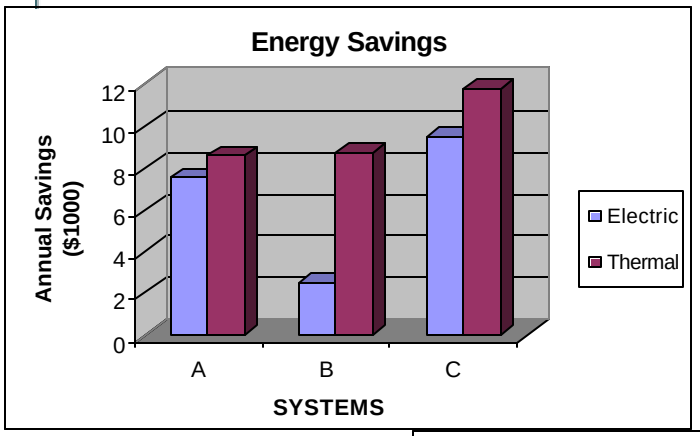


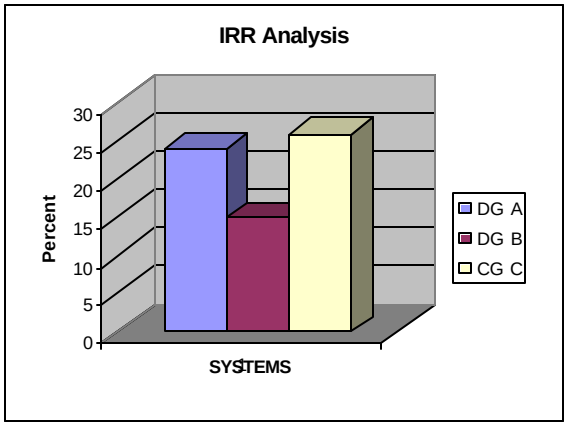


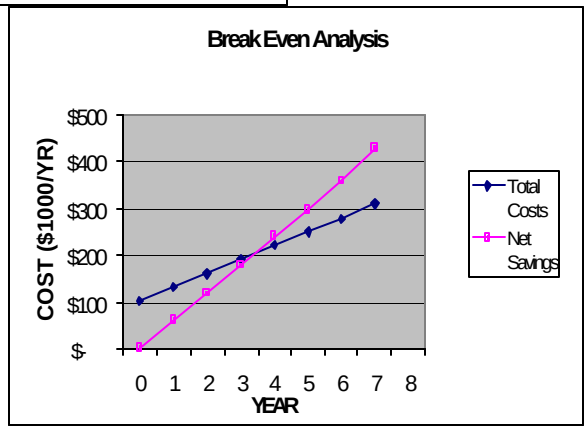
CHP



Technical & Economic Outcome







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Summary

- Utility perspective is conservative
- DG applications based on economic benefit
  - *Incentive programs favor CHP DG*
- Benefits need to be evaluated on business case need-- not traditional economics
- Environmental requirements increasing
- Customers need to identify priorities and perform analysis with internal team and/or consultant
  - *Technical and economic issues of DG solutions*
  - *Project management*
  - *Engineering*
  - *Permits*

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